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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,518	09/23/2004	Ting-Kun Yeh	61994.00017	5517

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SQUIRE, SANDERS & DEMPSEY L.L.P.  
PATENT DEPARTMENT  
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SAN FRANCISCO, CA 94111-3492

EXAMINER
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SAVLA, ARPAN P

ART UNIT.	PAPER NUMBER
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2185

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/22/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/711,518

Applicant(s)

YEH, TING-KUN

Examiner

Arpan P. Savla

Art Unit

2185

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 1-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### **Response to Amendment**

This Office action is in response to Applicant's communication filed February 26, 2007 in response to the Office action dated February 6, 2007. Claims 1-27 are pending in this application. In response to the restriction requirement claims 1-14 have been withdrawn and as such claims 15-27 are ready for examination by the Examiner.

### **INFORMATION CONCERNING OATH/DECLARATION**

#### **Oath/Declaration**

1. Applicant's oath/declaration has been reviewed by Examiner and is found to conform to the requirements prescribed in 37 CFR 1.63.

### **STATUS OF CLAIM FOR PRIORITY IN THE APPLICATION**

2. As required by MPEP § 201.14(c), acknowledgment is made of Applicant's claim for priority based on an application filed in the Taiwanese Patent Office on December 12, 2003.

### **INFORMATION CONCERNING DRAWINGS**

#### **Drawings**

3. The drawings are objected to because the submitted drawings are very faint, thus making portions of the figures unclear and very hard to read. Additionally, Figure 8 should be designated by a legend such as --Prior Art-- because only that which is old is

Art Unit: 2185

illustrated. See MPEP § 608.02(g). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

## **OBJECTIONS**

### **Specification**

4. A substitute specification in proper idiomatic English and in compliance with 37 CFR 1.52(a) and (b) is required. The substitute specification filed must be accompanied by a statement that it contains no new matter.

**REJECTIONS NOT BASED ON PRIOR ART**

**Claim Rejections - 35 USC § 112**

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **Claims 15-27** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. **As per claims 15-27**, the claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

**REJECTIONS BASED ON PRIOR ART**

**Claim Rejections - 35 USC § 103**

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 15-27** are rejected under 35 U.S.C. 103(a) as being obvious over Kurth (U.S. Patent Application Publication 2003/0177296) in view of Watts (U.S. Patent Application Publication 2003/0217224).

10. **As per claim 15**, Kurth discloses an arbitative apparatus of access request arbitration, comprising:

a plurality of access request selectors, wherein each one of the plurality of access request selectors receiving a plurality of access requests respectively (paragraph 0015; paragraph 0018; Fig. 1, elements 103; Fig. 2, element 206); *It should be noted that each "selector" in plurality of agents is analogous to the "access request selectors."*

wherein the arbitrate apparatus has its own priority level, and each access request selectors respectively selects one access requests grouped to respected priority level from the plurality of access requests (paragraph 0019; paragraph 0021; Fig. 3; Fig. 4, element 400).

Kurth does not expressly disclose an ownership selector, coupled to the plurality of access request selectors, when an access request is being executed, an asking point out signal is sent out to ask for pointing out the position of next access request;

and said ownership selector receives the plurality of access requests respectively and arranges the plurality of access requests which are selected by the plurality of access request selectors into a priority queue.

Watts discloses an ownership selector, coupled to the plurality of access request selectors, when an access request is being executed, an asking point out signal is sent out to ask for pointing out the position of next access request (paragraphs 0034-0035; Fig. 3, element 304); *It should be noted that the "selector" is analogous to the "ownership selector." It should also be noted that because the buffer is a non-FIFO buffer, it is required some sort of "asking signal" be sent out in order to locate the position of the next request within the buffer.*

and said ownership selector receives the plurality of access requests respectively and arranges the plurality of access requests which are selected by the plurality of access request selectors into a priority queue (paragraph 0032; paragraphs 0054-0055; Fig. 5, elements 502). *It should be noted that the "non-FIFO buffers" are analogous to a "priority queue."*

Kurth and Watts are analogous art because they are from the same field of endeavor, that being access request arbitration.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Watts' request reordering apparatus with Kurth's dynamic request priority arbitration system.

The motivation for doing so would have been to reduce the probability of a bank conflict to roughly  $3/16$  raised to the  $n$ th power, where  $n$  is the number of entries in the request buffer from which the next request may be selected by utilizing re-ordering (Watts, paragraph 0061).

Therefore, it would have been obvious to combine Kurth and Watts for the benefit of obtaining the invention as specified in claim 15.

11. **As per claim 16**, the combination of Kurth/Watts discloses a priority setting register coupled to the plurality of access request selectors for setting request numbers of access requests that belong to said priority level (Kurth, paragraph 0019; Fig. 3). *It should be noted that the "configuration register" is analogous to the "priority setting register."*

12. **As per claim 17**, the combination of Kurth/Watts discloses an ownership multiplexer, finding the corresponding request number of access request from register according to the position of said priority queue (Watts, paragraph 0040; Fig. 3, element 308; Kurth, paragraph 0021). *It should be noted that the "multiplexor" is analogous to the "ownership multiplexer."*

13. **As per claim 18**, the combination of Kurth/Watts discloses said ownership selector further comprises a next ownership selector unit, pointing out the position of the next access request when receiving said asking point out signal (Watts, paragraphs 0034-0035; Fig. 3, element 304). *It should be noted that the "selector" provides the functionality of the "next ownership selector unit."*

14. **As per claim 19**, the combination of Kurth/Watts discloses an OR gate with multi-inputs coupled between the plurality of access request selectors and said ownership selector and an output coupled to the ownership selector of one higher priority level, estimating whether there any access request is asked of this priority level, if there is, then arranging the access request into the last position of the priority queue of one higher priority level (Watts, paragraph 0034). *It should be noted that this limitation contains language that suggests or makes optional but does not require steps to be performed or does not limit the claim to a particular structure and therefore does not limit the scope of a claim. The term 'if' denotes an optionally recited limitation and optionally recited limitations are not guaranteed to take place. Optionally recited limitations are not required to be taught by the Office. See MPEP §2106, Section II(C)). It should also be noted that the selector's "logic" is analogous to the "OR gate."*



Art Unit: 2185

15. **As per claim 20**, the combination of Kurth/Watts discloses a 2-input AND gate, in which one input coupled to said ownership selector, estimating if said asking point out signal is sent, another input coupled to a estimation signal, estimating if the next access request is at the last position of the priority queue, and an output coupled to the ownership selector of one lower priority level, when both inputs are true, then pointing out the next access request of the one lower priority level (Watts, paragraph 0034). *It should be noted that this limitation contains language that suggests or makes optional but does not require steps to be performed or does not limit the claim to a particular structure and therefore does not limit the scope of a claim. The term 'if' denotes an optionally recited limitation and optionally recited limitations are not guaranteed to take place. Optionally recited limitations are not required to be taught by the Office. See MPEP §2106, Section II(C)). It should also be noted that the selector's "logic" is analogous to the "AND gate."*

16. **As per claim 21**, the combination of Kurth/Watts discloses at least one said arbitrate apparatus with different priority level can be combined as an arbitrate mechanism wherein said arbitrate mechanism can be an arbiter (Kurth, paragraph 0015, Fig. 1, elements 103). *It should be noted that the "agents" are analogous to "arbiters."*

17. **As per claim 22**, Kurth discloses an arbiter of access request arbitration, comprising:

Art Unit: 2185

a plurality of arbitative apparatus, each one has its own priority level (paragraph 0015; Fig. 1, elements 103); *It should be noted that the "agents" are analogous to "arbitrative apparatuses."*

wherein each one of the arbitative apparatus with different priority level at least comprises:

a plurality of access request selectors, wherein each one of the plurality of access request selectors receiving a plurality of access request respectively (paragraph 0018; Fig. 2, element 206); *See the citation note for the similar limitation in claim 15 above.*

wherein the arbitative apparatus has its own priority level, and each access request selectors respectively selects one access requests grouped to respected priority level from the plurality of access requests (paragraph 0019; paragraph 0021; Fig. 3; Fig. 4, element 400).

Kurth does not expressly disclose an ownership selector, coupled to the plurality of access request selectors, when an access request is being executed, an asking point out signal is sent out to ask for pointing out the position of next access request;

and said ownership selector receives the plurality of access requests respectively and arranges the plurality of access requests which are selected by the plurality of access request selectors into a priority queue.

Watts discloses an ownership selector, coupled to the plurality of access request selectors, when an access request is being executed, an asking point out signal is sent

out to ask for pointing out the position of next access request (paragraphs 0034-0035; Fig. 3, element 304); *See the citation note for the similar limitation in claim 15 above.*

and said ownership selector receives the plurality of access requests respectively and arranges the plurality of access requests which are selected by the plurality of access request selectors into a priority queue (paragraph 0032; paragraphs 0054-0055; Fig. 5, elements 502). *See the citation note for the similar limitation in claim 15 above.*

Kurth and Watts are analogous art because they are from the same field of endeavor, that being access request arbitration.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Watts' request reordering apparatus with Kurth's dynamic request priority arbitration system.

The motivation for doing so would have been to reduce the probability of a bank conflict to roughly  $3/16$  raised to the  $n$ th power, where  $n$  is the number of entries in the request buffer from which the next request may be selected by utilizing re-ordering (Watts, paragraph 0061).

Therefore, it would have been obvious to combine Kurth and Watts for the benefit of obtaining the invention as specified in claim 22.

18. **As per claim 23**, the combination of Kurth/Watts discloses a priority setting register coupled to the plurality of access request selectors for setting request numbers of access requests that belong to said priority level (Kurth, paragraph 0019; Fig. 3).

*See the citation note for claim 16 above.*

19. **As per claim 24**, the combination of Kurth/Watts discloses an ownership multiplexer, finding the corresponding request number of access request from register according to the position of said priority queue (Watts, paragraph 0040; Fig. 3, element 308; Kurth, paragraph 0021). *See the citation note for claim 17 above.*

20. **As per claim 25**, the combination of Kurth/Watts discloses said ownership selector further comprises a next ownership selector unit, pointing out the position of the next access request when receiving said asking point out signal (Watts, paragraphs 0034-0035; Fig. 3, element 304). *See the citation note for claim 18 above.*

21. **As per claim 26**, the combination of Kurth/Watts discloses an OR gate with multi-inputs coupled between the plurality of access request selectors and said ownership selector and an output coupled to the ownership selector of one higher priority level, estimating whether there any access request is asked of this priority level, if there is, then arranging the access request into the last position of the priority queue of one higher priority level (Watts, paragraph 0034). *See the citation note for claim 19 above.*

22. **As per claim 27**, the combination of Kurth/Watts discloses a 2-input AND gate, in which one input coupled to said ownership selector, estimating if said asking point out signal is sent, another input coupled to a estimation signal, estimating if the next access request is at the last position of the priority queue, and an output coupled to the ownership selector of one lower priority level, when both inputs are true, then pointing out the next access request of the one lower priority level (Watts, paragraph 0034). *See the citation note for claim 20 above.*

**RELEVANT ART CITED BY THE EXAMINER**

The following prior art made of record and not relied upon is cited to establish the level of skill in Applicant's art and those arts considered reasonably pertinent to Applicant's disclosure. See MPEP 707.05(e).

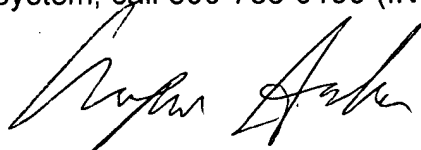
1. U.S. Patent 6,782,441 (Nguyen et al.) discloses an arbitration method and mechanism assigning priority to one of a combination of requesters.
2. U.S. Patent 6,779,092 (Watts) is the corresponding U.S. Patent to U.S. Patent Application Publication 2003/0217224 used in the rejections above.
3. U.S. Patent 6,880,028 (Kurth) is the corresponding U.S. Patent to U.S. Patent Application Publication 2003/0177296 used in the rejections above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arpan P. Savla whose telephone number is (571) 272-1077. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sanjiv Shah can be reached on (571) 272-4098. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2185

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Arpan Savla  
Art Unit 2185  
March 19, 2007



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